

Chapter 4, Lesson 42, Making a window frame

In this lecture re revisit some basic modelling and learn about flipped normals.

- Flipped normals and what it is
- Basic modelling techniques
- Using the snapping tool

Chapter 4, Lesson 42, Making a window frame

In this lecture we are going to start to create some details of the building. We are going to start simple with just a wooden bar and a window frame.

Wooden bar

Start by creating a new cube, go into edit mode and scale it down so that one side of the cube is roughly the width of a wooden bar in relation to the reference image.

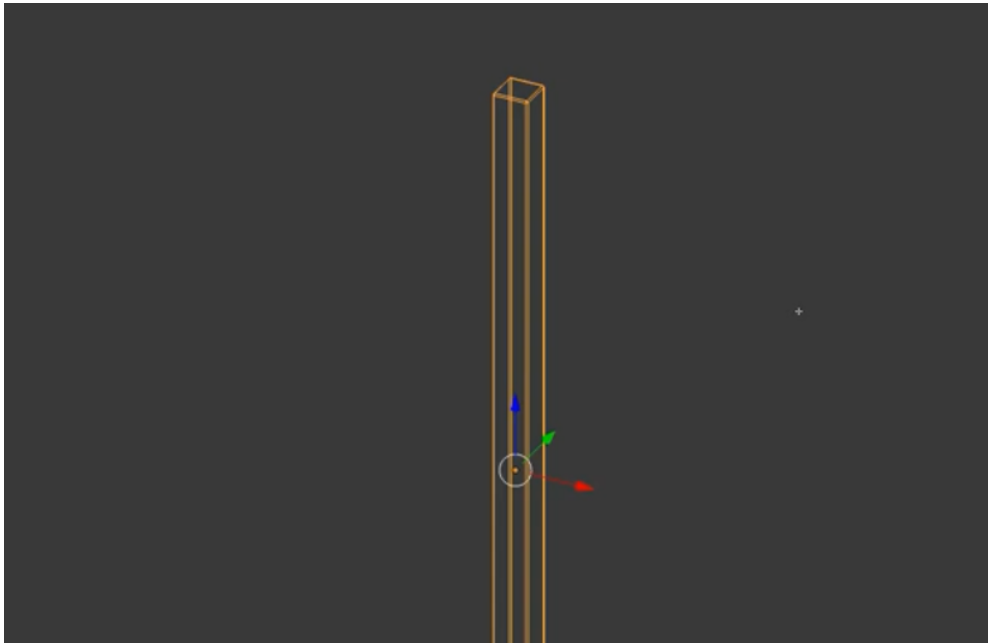


Now scale it on the Z axis by using **"S"** followed by **"Z"**.



Since we went into edit mode for our scaling the scale of the object should still be set to 1 on all axis. Check this by going back to object mode, hit **N** to bring up the N-panel if it is not already open and check the scale values in the transformation section. Make sure they are set to 1.

Now go back to edit mode and use **ctrl+B** to bevel the edges of the cube slightly. This will help with the shading of the object in the final render. The bevel will catch some light and appear more realistic.



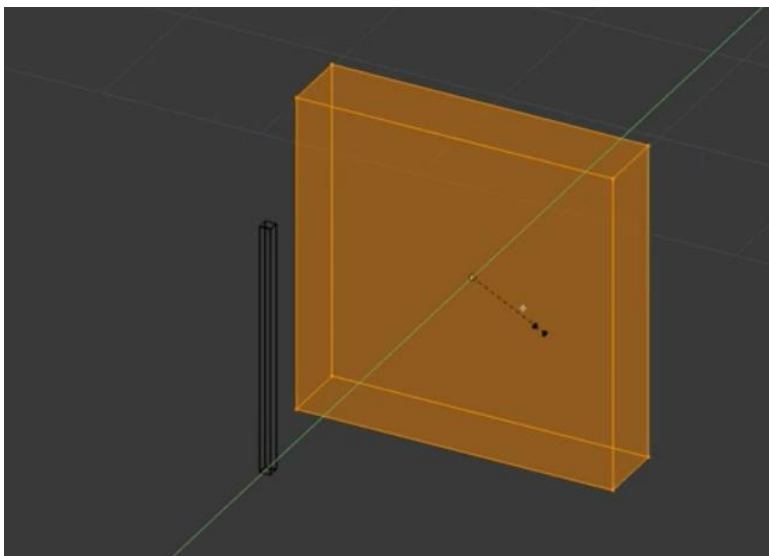
Something to keep in mind when using the bevel tool is that it creates triangles in the mesh at the vertices that has more than two edges connected to itself. If you want to maintain all quads in your object scroll the mouse wheel once to add an edge loop in the middle of the bevel. This will make sure that the intersections are maintaining quads in most cases. In this case it is not necessary but on some models, this may be desired. For instance, if you want to make an edge loop with **ctrl+R** along your bevel the triangle will stop the edge flow while a quad will have the loop continue through it. Same is true for an n-gon. An edge loop will stop if it reaches one.

We are now done with our first object, lets move on to the window frame.

Window frame

Left click to place the 3d cursor next to your wooden bar or right click if you have your user preferences set to select with left.

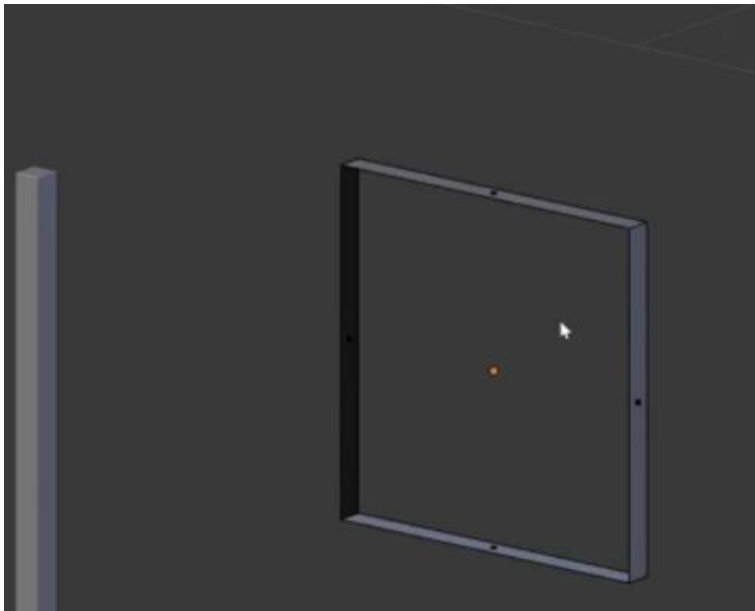
Hit **shift+A** and add a new cube. Go into edit mode and scale it on they Y axis with **"S"** followed by **"Y"** to limit the scaling to the Y axis. Scale it to a width that is approximately the same as the wooden bar and possibly slightly thinner.



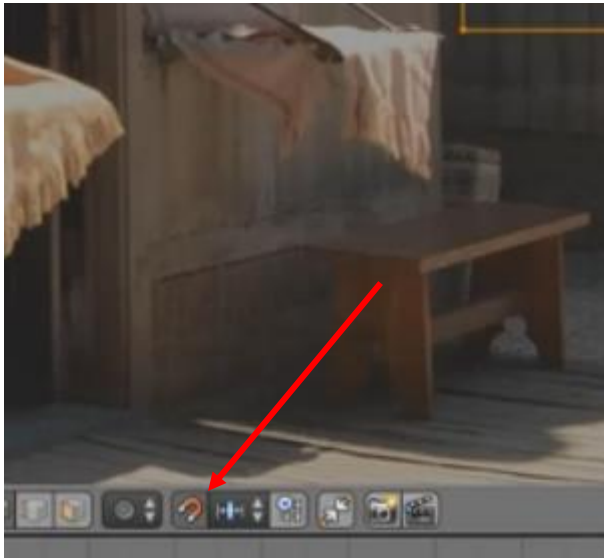
Scale it to be about the size of the two windows above the door on the reference image. Keep in mind that this is wider than the door.



Go into edit mode and delete the front and back face so that we are only left with the sides.



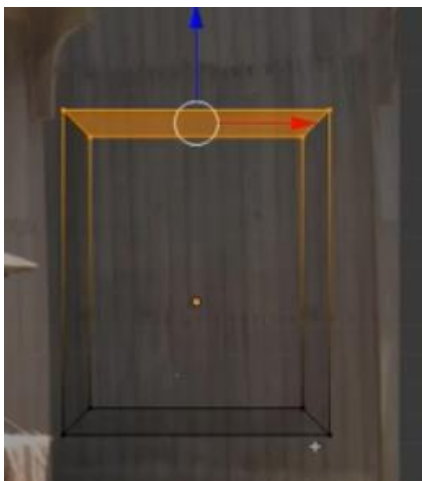
Now turn on snapping by going to the magnet icon in the bar below the 3D viewport and click it to turn it red. Alternatively you can hold down **ctrl** while performing a transformation to temporarily enable snapping.



Select everything in the object with “A” and extrude. Hit “S” and “X” to scale the extrusion inwards two steps of the snapping and again with “S” followed by “Z” for the Z direction also two steps.

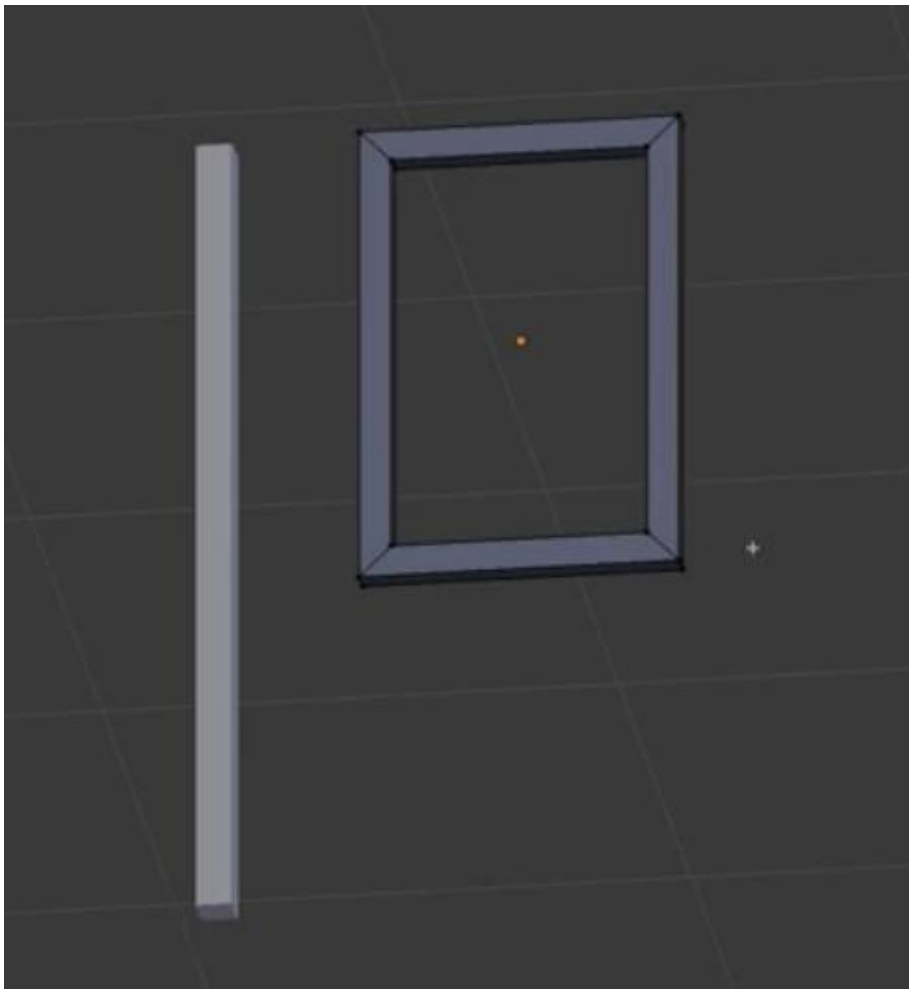


Use box selection to select the bottom vertices and grab them down. Adjust until you have the right proportions of the window.

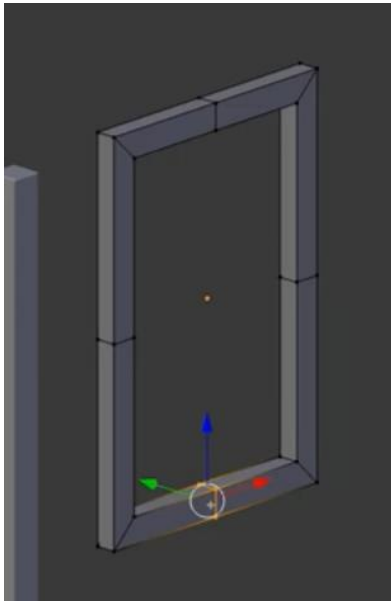


At this point you may come across something called flipped normals. Faces have one front and one back side. Normally you can spot this in the viewport by looking at the gray color of the object. An object that is darker than usual usually have flipped normals. To see the direction the normals are pointing you can go to the N-panel while in edit mode and in the “Mesh display” area you can find the “normals” setting. Click the face icon to view face normal and lines will be drawn from every face in the viewport on the selected object to indicate the direction of the normal. To flip the normal of your selected faces hit **ctrl+F** and select “flip normals” at the top.

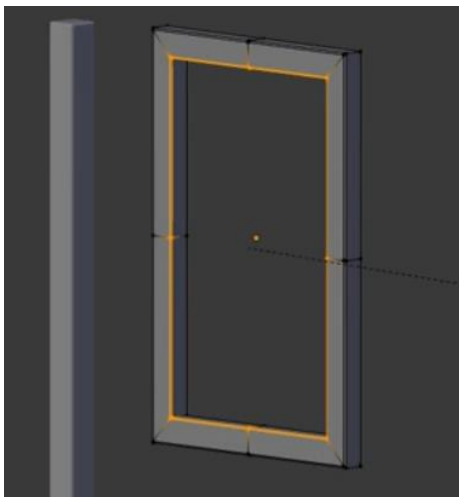
Another option is to use “recalculate normal”. This setting is found in the same menu or by using the **ctrl+n** shortcut directly. This setting will allow blender to calculate which direction each selected normal should be facing and if the object mesh does not have holes in it this works just as well. It is also a very good option if only parts of your object have flipped normals. Then you can let blender recalculate the whole object to correct this most of the time.



Enough about normals for now, lets continue. In edit mode add one extra edge loop around each side of the window frame. This will later allow us to change the shape around a bit more to make each window frame unique that we copy from this one.



Now select the outside of the window frame on one side and bevel it to create a nice edge. Do the same for the inside on the same side.



Last, we will remove the backside faces of the window frame because they will never be seen and since we plan to copy this frame around later we will save ourselves some data that we don't need. For a single image render this may not be noticeable but everything we can optimize will add up if we for instance will render an animation at some point.

